BEFORE THE
ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

REPORT TO CONGRESS	:	51 Fed. Reg. 777
ON MINING WASTE	:	(January 8, 1986)

COMMENTS OF KENNECOTT

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I. EXECUTIVE SUMMARY

Sections 8002(f) and (p) of the Resource Conservation and Recovery Act (RCRA) require EPA to make a "detailed and comprehensive study on the adverse effects" of mining waste on human health and the environment as a prerequisite for determining whether mining waste should be regulated under RCRA subtitle C. The Mine Waste Report fails to meet this requirement as to copper mining waste because the Report contains little information concerning (1) migration of hazardous substances into the environment, (2) existing regulatory protection of health and the environment, (3) varying characteristics of the wastes involved, (4) site-specific differences affecting waste management needs, and (5) how application of current RCRA subtitle C regulations would affect integrated copper

mining, beneficiation and processing operations such as Kennecott operates in Arizona, New Mexico and Utah.

The Report also fails to adequately analyze the infeasibility of applying current RCRA subtitle C requirements to copper mining operations. Obviously lining the bottom of active copper waste facilities and capping the top at closure with a similar liner is technologically infeasible and would create safety hazards. Groundwater monitoring for most RCRA hazardous substances (Appendix VIII list) is unnecessary. The "mixture" and "derived from" rules would present substantial, unnecessary problems for integrated mining, beneficiation and processing facilities. There is no alternative to land disposal of large-volume mining wastes and promulgation of reasonable mine waste standards would appear to be impossible. RCRA subtitle C regulation would be economically infeasible for the copper industry according to EPA contractor estimates and data compiled by Kennecott indicate that even the contractor's lower cost scenarios would cause substantial facility closures. These contractor estimates are also substantially understated.

These shortcomings preclude a determination to regulate copper mining waste under RCRA subtitle C on the basis of the Mine Waste Report as it now stands.

II. THE STATUTE REQUIRES EPA TO CONDUCT A DETAILED AND COMPREHENSIVE STUDY AS A PREREQUISITE FOR DETERMINING WHETHER MINING WASTE SHOULD BE REGULATED UNDER RCRA SUBTITLE C.

RCRA Section 8002(f) requires EPA, in consultation with the Department of Interior, to "conduct a detailed and comprehensive study on the adverse effects" of mining waste "on the environment." The statute lists the following specific items which the study must consider:

(1) the sources and volume of mining waste;

(2) potential dangers to human health and the environment from leachate and dust pollution;

(3) the adequacy of waste management practices currently used by the mining industry;

(4) the adequacy of waste management practices currently required by government agencies;

(5) alternatives to current practices and their costs, including the impact on mining production costs; and

(6) the potential for use of mining waste as a secondary source of the mine product. 1/

1/ Section 8002(p) requires EPA to conduct a similar study of mineral processing wastes "in conjunction with" the mining waste study. EPA has proposed regulation of some mineral processing wastes without the required study, a course Kennecott has opposed in its comments of January 2, 1986 on that proposal (see 50 Fed. Reg. 40292, Oct. 2, 1985).

RCRA section 3001(b)(3) prohibits regulation of mining wastes as hazardous wastes under RCRA subtitle C until at least six months after the mine waste study is completed. At that time, EPA must determine either to promulgate subtitle C regulations for mining waste or that such regulations are unwarranted. This determination must be based on the Mine Waste Report and public comments and testimony on the Report. Accordingly, a detailed and comprehensive report addressing all of the factors listed above is a statutory prerequisite to determining whether mining waste should be regulated under subtitle C. The Mine Waste Report does not satisfy this requirement, as discussed below.

III. EPA HAS MADE A GOOD START, BUT HAS NOT SUBMITTED A COMPREHENSIVE STUDY TO CONGRESS

The Mine Waste Report contributes significant information in some areas. For example, the Report contains useful information concerning existing quantities of mining waste and the structure and location of the mining industry. The Report also correctly concludes that the costs of regulating mining waste under RCRA subtitle C would be substantial. However, the Report does not fulfill its primary purpose, which is to determine whether public health or the environment is

being harmed through exposure to hazardous substances in mining waste.

A. The Report Does Not Contribute Significant Exposure Data for Copper Mining Waste

1. Migration of hazardous substances. The Mine Waste Report contains little data concerning migration of hazardous substances from copper mining waste into the environment. Two copper waste sites were studied: a tailings pond in Arizona and dump leach piles at Kennecott's New Mexico mine (p. 4-50). Surface water was not monitored at either site (p. 4-51). Groundwater monitoring around the tailings pond revealed no hazardous substances, as "concentrations of metals were very low (under detection limits) in all wells" (p. 4-51). Some seepage of sulfates and total dissolved solids was found, at levels above national secondary drinking water standards (id.). However, these are not RCRA hazardous constituents, and the secondary drinking water standards are set merely to protect certain "aesthetic qualities" of drinking water (see 40 C.F.R. 143).

Analysis of Kennecott's New Mexico dump leach piles produced similar results. Again, there was no evidence indicating exceedance of primary drinking water standards. Although the Report found increased groundwater concentrations

of sulfates, calcium and total dissolved solids, and surmises seepage into an aquifer, no hydrogeologic study was performed and the Report does not state that secondary drinking water standards were exceeded (p. 4-53). Further, Kennecott repeatedly has pointed out to EPA and its contractors that the concentrations found did not exceed natural background concentrations of these substances throughout the area around the New Mexico mine.[1/]

The Report's analyses of past environmental damage cases also provide little evidence of harmful exposure to hazardous substances migrating from mining waste. In general, the Report concludes that in such cases: (1) human health rarely was threatened; (2) environmental effects usually were reversible; and (3) most damage was caused by past disposal practices no longer in use (pp. 4-63-68, 4-72, 6-9).

2. Existing regulatory protection. Groundwater protection measures required by federal or state law also have an important bearing on the extent of human or environmental exposure to hazardous substances in mining waste. The Report does

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1/ See Letter from R.A. Malone to Penelope Hansen and Attachment (May 1, 1984), attached as Appendix 1 to these comments.

not discuss evolving federal groundwater requirements, but these ultimately may provide a great deal of protection around mine waste sites and should be considered.[1/] The Report also fails to provide any significant analysis of groundwater protection requirements adopted by the states in which Kennecott copper mining facilities are located. Those states are New Mexico, Utah, Nevada and Arizona, and their current regulatory requirements are discussed below.[2/]

New Mexico

EPA's contractor confirms that "impoundments in New Mexico must be permitted."[3/] Monitoring wells, diversion ditches and other corrective action can be required if maintenance of state water quality standards cannot be

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1/ For example, both the House and Senate have passed Safe Drinking Water Act Amendments containing groundwater protection programs. See H.R. 1650 and H.R. Rep. No. 168, 99th Cong., 1st Sess. (1985); S. 124 and S. Rep. No. 56, 99th Cong., 1st Sess. (1985). Separate groundwater legislation also is pending in both houses. See S. 1836, 99th Cong., 1st Sess. (1985), 131 Cong. Rec. S15102 (daily ed. November 7, 1985) (remarks of Rep. Mitchell upon introduction); H.R. 3808, 99th Cong., 1st Sess. (1985), 131 Cong. Rec. H10492 (daily ed. November 21, 1985) (remarks of Rep. Bustamonte upon introduction).

2/ The Mine Waste Report indicates that these states account for 96 percent of domestic copper production (Table 2-4).

3/ Charles River Associates, "State Regulations and Management Practices in the U.S. Mining Industry," p. 5 (1984).

demonstrated. Although CRA indicates that only monitoring can be required after closure in New Mexico, the state regulations require "measures to prevent groundwater contamination after the cessation of operations, including post-operational monitoring."[1/]

Utah

CRA found that "monitoring and reclamation plans must be approved in Utah" (p. 5). Monitoring wells and diversion ditches can be required. Kennecott would add that the State of Utah currently is considering a comprehensive program for regulating groundwater contamination from mining operations. Specific requirements under consideration include: (1) storm and surface water diversion systems; (2) groundwater monitoring; (3) closure requirements; (4) aquifer pumpback and treatment systems; and (5) reinjection of treated water into barrier wells.[2/]

Nevada

For Nevada, CRA found that "heap leaching operations and closure plans for all mining operations require a permit.

1/ New Mexico Water Quality Regulations, § 3-107(11).

2/ The requirements are recommended in a draft report prepared by the State Subcommittee on Groundwater Strategy for Mining in Utah. Kennecott will provide EPA with a copy of the report when it is finalized.

Nevada law states that mining operations must protect other resources, and in Nevada water is the primary resource that must be protected. . . Given the state's mandate to protect the water supply, RCRA's objectives may be met" (p. 4).

Arizona

CRA concluded that Arizona does not regulate the mining industry (p. 5). However, the CRA report was prepared in 1984, and testimony at EPA's Denver hearing on the mine waste Report indicates that conditions in Arizona have changed since then:

> "Arizona now does regulate groundwater discharges from mining operations through a comprehensive groundwater protection permit program adopted in 1984. The Arizona regulations require mine facilities to file a Notice of Disposal and a permit application which requires the performance of a hydrogeologic report and disposal impact assessment. The Arizona permit program specifically regulates mining operations to protect against any 'adverse impact upon groundwater quality.' As a permit condition, mining operators are required to take all steps necessary to correct 'any reasonable change to the physical, chemical, or biological character of groundwater' caused by mining operations." 1/

1/ See Testimony of Colleen D. Kelley, pp. 1-2 (March 13, 1986).

B. The Report Does Not Contribute Significant Information in Other Critical Areas

1. Waste characterization. The Mine Waste Report presents test results indicating that only 10 percent of the samples of copper dump leach liquor exhibited corrosivity, and 1 percent exhibited EP toxicity (Tables 4-3, -4, -5, -8). However, dump leach liquor is not a waste. It is a process stream and the Report points out that leach liquor is collected carefully in order to maximize metal recovery (p. 2-17). Dump leach waste piles apparently were not tested by EPA.

Additionally, the Report contains little data concerning the acid formation potential of copper tailings. EPA questions whether acid formation in tailings may increase the concentration of toxic metals in leachate, but the Report presents no evidence that toxic metals are migrating from copper tailings ponds (p. 4-37). The Report also lists a number of assumptions and limitations inherent in the analysis of acid formation potential (pp. 4-39-41). For these reasons, Kennecott supports the Report's conclusion that current information is insufficient to establish any threat to public health or the environment as a result of acid formation in tailings (p. 6-13).

2. Site-specific differences. The Mine Waste Report concludes that siting is the most important factor affecting

concentrator tailings at some operations. The buffering capacity of the tailings neutralizes the acid plant blowdown and precipitates the dissolved metals. This practice of using tailings to treat acid plant blowdown is an environmentally satisfactory disposal method which should have been considered in the Report.

C. The Report Does Not Adequately Analyze the Infeasibility of Applying Current RCRA Subtitle C Requirements to Copper Mining Operations

1. Lining and capping. Current subtitle C regulations would require lining the bottom of active copper waste facilities and capping the top at closure with a similar liner (see 40 C.F.R. §§ 264.221, 264.228). The Mine Waste Report contains the following findings pertinent to these requirements:

> "The ongoing nature of the disposal process at active sites makes certain mitigative measures inappropriate for use at such sites. For example, methods such as caps or covers that are designed to control the volume of liquids percolating into the site cannot be used . . . Although both synthetic and natural liners can be used cost-effectively in relatively small disposal areas, they have not been used in the very large waste facilities that are typical of mining industry waste sites (some of which cover a square kilometer or more); and they may in fact not be feasible at such sites. Experience is inadequate to evaluate the performance of

> liners at large-area, large-volume sites. Lining large areas with synthetic (membrane-type) liners would require many liners to be fastened together to form a single large liner; each seam represents a point of potential failure. If a liner underlying such a large waste area failed, it would be impossible to repair.
>
> Installing liners at existing disposal areas in this industry would require moving billions of tons (approximately 50 billion tons) of material that has been deposited over the years. Many active disposal sites have been used for many years, and the areas are continually built up. Movement of these materials to new lined sites severely affects the cost of operations at these sites" (pp. 3-23-24, 3-31).

In addition to these problems discussed in the Report, Kennecott believes that significant slope stability and dam structure stability problems would be caused by synthetic liners used for dump leach piles and tailings ponds, raising serious safety questions not addressed in the Mine Waste Report.

2. Groundwater monitoring. Mining waste contains only a few hazardous substances capable of seeping into groundwater, mostly heavy metals. Compliance monitoring for all RCRA hazardous constituents (Appendix VIII list) is therefore unnecessary and inappropriate at mine waste disposal sites.

3. "Mixture" and "derived from" rules. These current subtitle C regulations specify that all wastes mixed with

listed hazardous wastes must be treated as listed wastes, and that any wastes derived from listed wastes must be treated as listed wastes. As explained in Point B-3 above, these rules are inappropriate for integrated mining operations.

4. Land disposal prohibitions. There is no alternative to land disposal of large-volume mining wastes, nor would it be possible to promulgate reasonable mine waste treatment standards. Where a particular mining waste facility is contaminating groundwater, the Report discusses a wide variety of potential corrective actions which are available for necessary public health and environmental protection.

5. Economic feasibility. EPA's contractor estimated that full subtitle C regulation of copper wastes would increase production costs between 50 and 80 cents per pound of copper, depending on which wastes are regulated.1/ CRA estimated that a "tailored" subtitle C scenario would increase costs 10-11 cents per pound, and even the "corrective action only" scenarios would increase costs between .8 and 4.5 cents per pound.

1/ See Charles River Associates, "Estimated Costs to the U.S. Mining Industry for Management of Hazardous Solid Wastes" (1985), pp. 27-29.

For copper, which currently sells on the international market for about 65 cents per pound, such costs are prohibitive. One major deficiency of the Mine Waste Report is that it contains only a cost analysis and does not provide any comprehensive economic analysis of potential employment, trade, competitive and other economic effects. Data compiled by Kennecott indicate that current copper prices are already below production costs for many domestic mines, and that even CRA's lower cost scenarios would cause substantial facility closures.1/

Kennecott's analysis also suggests that CRA's cost figures are substantially underestimated. Kennecott's data show that full application of current subtitle C requirements to dump leach waste and tailings would cost over $12 billion at Kennecott's Utah mine alone, using CRA's methodology for estimating costs. If tailings treatment is not required, the Utah unit cost would be 41% higher than CRA calculated for the industry.

1/ See "Kennecott's Comments on the Economic Analysis of the EPA Mine Waste Report," attached as Appendix 2 to these comments.

IV. ABSENT A COMPREHENSIVE STUDY, EPA CANNOT DECIDE TO REGULATE COPPER MINING WASTE UNDER SUBTITLE C

As discussed in Point II above, a detailed and comprehensive study is a legal prerequisite to EPA's decision whether to regulate mining waste under RCRA subtitle C. Point III demonstrated that although the Report contains a great deal of useful information, it presents little data concerning the effects of mining waste on public health and the environment and also lacks essential information in other areas. Accordingly, it does not provide an adequate basis, either legally or factually, for EPA to determine that copper mining waste should be regulated under RCRA subtitle C.

Respectfully submitted,

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